

# $\Omega$ BARYONS

## $(S = -3, I = 0)$

$$\Omega^- = sss$$

NODE=BXXX035

 $\Omega^-$ 

$$I(J^P) = 0(\frac{3}{2}^+)$$

$J^P = \frac{3}{2}^+$  is the quark-model prediction; and  $J = 3/2$  is fairly well established.

$$\text{Mass } m = 1672.45 \pm 0.29 \text{ MeV}$$

$$(m_{\Omega^-} - m_{\bar{\Omega}^+}) / m_{\Omega^-} = (-1 \pm 8) \times 10^{-5}$$

$$\text{Mean life } \tau = (0.821 \pm 0.011) \times 10^{-10} \text{ s}$$

$$c\tau = 2.461 \text{ cm}$$

$$(\tau_{\Omega^-} - \tau_{\bar{\Omega}^+}) / \tau_{\Omega^-} = 0.00 \pm 0.05$$

$$\text{Magnetic moment } \mu = -2.02 \pm 0.05 \mu_N$$

### Decay parameters

$$\Lambda K^- \quad \alpha = 0.0180 \pm 0.0024$$

$$\Lambda K^-, \bar{\Lambda} K^+ \quad (\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha}) = -0.02 \pm 0.13$$

$$\Xi^0 \pi^- \quad \alpha = 0.09 \pm 0.14$$

$$\Xi^- \pi^0 \quad \alpha = 0.05 \pm 0.21$$

NODE=S024

NODE=S024M;DTYPE=M

NODE=S024DMM;DTYPE=D

NODE=S024T;DTYPE=g

NODE=S024CTA;DTYPE=C;OUR EVAL

NODE=S024TD;DTYPE=x;OUR EST;

NODE=S024MM;DTYPE=m

CLUMP=D

NODE=S024AL;DTYPE=d;CLUMP=D

NODE=S024ALD;DTYPE=d;CLUMP=D

NODE=S024AX0;DTYPE=d;CLUMP=D

NODE=S024AX-;DTYPE=d;CLUMP=D

$\Omega^-$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level	$p$ (MeV/c)
$\Lambda K^-$	(67.8±0.7) %		211
$\Xi^0 \pi^-$	(23.6±0.7) %		294
$\Xi^- \pi^0$	( 8.6±0.4) %		289
$\Xi^- \pi^+ \pi^-$	( 3.7 <sup>+0.7</sup> <sub>-0.6</sub> ) × 10 <sup>-4</sup>		189
$\Xi(1530)^0 \pi^-$	< 7 × 10 <sup>-5</sup>	90%	17
$\Xi^0 e^- \bar{\nu}_e$	( 5.6±2.8) × 10 <sup>-3</sup>		319
$\Xi^- \gamma$	< 4.6 × 10 <sup>-4</sup>	90%	314
<b><math>\Delta S = 2</math> forbidden (<math>S_2</math>) modes</b>			
$\Lambda \pi^-$	$S_2$ < 2.9 × 10 <sup>-6</sup>	90%	449

NODE=S024220;DESIG=1

DESIG=2

DESIG=3

DESIG=8

DESIG=6

DESIG=7

DESIG=5

NODE=S024;CLUMP=A

DESIG=4

 $\Omega(2250)^-$ 

$$I(J^P) = 0(?^?)$$

$$\text{Mass } m = 2252 \pm 9 \text{ MeV}$$

$$\text{Full width } \Gamma = 55 \pm 18 \text{ MeV}$$

NODE=B141

NODE=B141M;DTYPE=M

NODE=B141W;DTYPE=G

$\Omega(2250)^-$ DECAY MODES	Fraction ( $\Gamma_i/\Gamma$ )	$p$ (MeV/c)
$\Xi^- \pi^+ K^-$	seen	532
$\Xi(1530)^0 K^-$	seen	437

NODE=B141215;DESIG=1;OUR EST

DESIG=2;OUR EST